

Exhibit 29

BP 132



Case Docket
No. 3528C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of: :
DAVID C. HECKERT :
Serial No. 131,956 :
Filed: December 11, 1987 :
For: FRUIT JUICE BEVERAGES AND JUICE :
CONCENTRATES NUTRITIONALLY :
SUPPLEMENTED WITH CALCIUM :
-----:

11-2288
Group 132

Examiner:
C. Paden

11-2288
HC.

AMENDMENT UNDER 37 CFR 1.111

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

In response to the Office Action dated May 12, 1988 rejecting Claims 19 - 28 in the above-identified application, please enter the following amendments and consider the following remarks. The response period has been extended through November 12, 1988 by a petition for a three month extension of time pursuant to 37 CFR 1.136(a) and payment of the appropriate fee pursuant to 37 CFR 1.17(c).

IN THE CLAIMS:

Please cancel Claims 19 through 28 without prejudice and substitute in lieu thereof the following new claims:

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~~Claim 29~~ 29. A method for preparing a calcium-supplemented fruit juice product which comprises the steps of:

B1 (a) forming an at least meta-stable aqueous premix solution of solubilized calcium comprising:

(i) from about 0.05 to about 0.26% by finished, single-strength fruit juice product weight, solubilized calcium, wherein the source of said solubilized calcium is selected from the group consisting of calcium carbonate, calcium oxide and calcium hydroxide;

(ii) from about 0.4 to about 4.0% by finished, single-strength fruit juice product weight, of an acid component consisting essentially of citric acid and malic acid in a weight ratio of from about 5:95 to about 90:10; and

(iii) water; and

(b) combining said premix solution of solubilized calcium with fruit juice material comprising concentrated fruit juice having a sugar content from about 20 to 80° Brix, to provide a finished, single-strength, calcium supplemented fruit juice product having: 1) at least about 45% fruit juice; and 2) a sugar content of from about 2 to about 16° Brix.

2 ~~Claim 30~~ 30. The method of Claim ~~29~~ 29 wherein the premix solution of solubilized calcium is formed by the steps of: (1) forming an aqueous solution containing the acid component; and (2) adding the calcium source to the acid component-containing solution.

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~~Claim 31.~~ The method of Claim ³29 wherein the premix solution of solubilized calcium further comprises an effective amount of a premix solution stabilizer.

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~~Claim 32.~~ The method of Claim ⁴31 wherein the premix solution stabilizer comprises sugar in an amount sufficient to provide a premix solution sugar content of from about 2 to 40° Brix.

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~~Claim 33.~~ The method of Claim ⁵31 wherein the premix solution stabilizer comprises from about 0.01 to about 0.5% by weight/ premix solution volume basis of a polysaccharide selected from the group consisting of pectin, algins, hydrolyzed starches and xanthan gum.

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~~Claim 34.~~ The method of Claim ⁶31 wherein the premix solution stabilizer comprises concentrated fruit juice in an amount sufficient to provide a premix solution sugar content of from about 2 to about 12° Brix.

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~~Claim 35.~~ The method of Claim ⁷30 wherein the fruit juice is concentrated orange juice and wherein the acid component comprises from about 15 to about 60% by weight citric acid and from about 40 to about 85% malic acid.

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~~Claim 36.~~ The method of Claim ⁸38 wherein the calcium source is calcium carbonate and wherein the weight ratio of acids to calcium in the premix solution is from about 1 to about 6.

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~~Claim 37.~~ The method of Claim ⁹36 wherein the premix solution of solubilized calcium further comprises concentrated orange juice in an amount sufficient to provide a sugar content in the premix solution of from about 2 to about 12° Brix.

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~~Claim 38.~~ The method of ~~Claim 35~~⁴ wherein the premix solution of solubilized calcium further comprises sugar in an amount sufficient to provide a sugar content in the premix solution of from about 2 to about 40° Brix.

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~~Claim 39.~~ The method of ~~Claim 35~~⁷ which provides a calcium supplemented orange juice beverage having from about 0.05 to about 0.26% by finished, single-strength fruit juice product weight basis, solubilized calcium and a sugar content of from about 5 to about 14° Brix.

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~~Claim 40.~~ A method for preparing a concentrated calcium-supplemented fruit juice product which comprises the steps of:

(a) forming an at least meta-stable aqueous premix solution of solubilized calcium comprising:

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² i) from about 0.15 to about 1.30% by concentrated juice product weight, solubilized calcium, wherein the source of said solubilized calcium is selected from the group consisting of calcium carbonate, calcium oxide and calcium hydroxide;

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² ii) from about 1.2 to about 20% by concentrated juice product weight, of an acid component consisting essentially of citric acid and malic acid in a weight ratio of from about 5:95 to about 90:10; and

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² iii) water; and

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² (b) combining said premix solution of solubilized calcium with fruit juice material comprising concentrated fruit juice

having a sugar content from about 20 to about 80° Brix, to provide a concentrated calcium-supplemented fruit juice product having a sugar content of from about 6 to about 75° Brix; wherein the concentrated calcium-supplemented fruit juice product provides upon dilution a single-strength, calcium-supplemented fruit juice product having: (1) at least about 45% by weight fruit juice; (2) a sugar content of from about 2° to about 16° Brix; and (3) a calcium content from about 0.05 to about 0.26% by weight.

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Claim 41. The method of Claim 40 wherein the premix solution of solubilized calcium further comprises an effective amount of a premix stabilizer.

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Claim 42. The method of claim 40 wherein the premix solution of solubilized calcium is formed by the steps of: (1) forming an aqueous solution containing the acid component; and (2) adding the calcium source to the acid containing aqueous solution.

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Claim 43. The method of Claim 42 wherein the concentrated fruit juice is concentrated orange juice and wherein the acid component comprises from about 15 to about 60% by weight citric acid and from about 40 to about 85% by weight malic acid.

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Claim 44. The method of Claim 40 which comprises the further step of freezing the calcium-supplemented orange juice concentrate.

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Claim 45. The method of Claim 41 wherein the premix solution stabilizer comprises sugar in an amount sufficient to provide a premix solution sugar content of from about 2 to 40° Brix.

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Claim 46. The method of Claim 41 wherein the premix solution

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stabilizer comprises from about 0.01 to about 0.5% by weight/
premix solution volume basis of a polysaccharide selected from the
group consisting of pectin, algins, hydrolyzed starches and xanthan
gum.

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Claim 41. The method of claim 41 wherein the premix solution
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stabilizer comprises concentrated fruit juice in an amount
sufficient to provide a premix solution sugar content of from about
2 to about 12° Brix.--

REMARKS

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Applicant respectfully requests reconsideration of the instant
application in light of these amendments and the following remarks.
After amendment, Claims 29 to 47 are currently pending in the
instant application.

The Invention:

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The instant claimed invention is a method of preparing
calcium-supplemented fruit juice products and calcium-supplemented
fruit juice product concentrates via preparing a premix containing
a combination of citric acid and malic acid, a specific source of
calcium, water and optionally a premix solution stabilizer. This
premix solution of solubilized calcium is then combined with the
remainder of the ingredients necessary to produce the desired
single-strength or concentrated, calcium-supplemented fruit juice
product. The use of a premix solution of solubilized calcium to
effect the combination of the calcium with the remainder of the
fruit juice product components overcomes a variety of processing
and product problems associated with the direct addition of calcium
to a fruit juice product.

During the prosecution of the parent application (Serial No. 860,607, Filed May 7, 1986 which, in part, matured into U.S. Patent 4,722,847) the Applicant, David C. Heckert, the Applicant's associate, Timothy W. Dake, and the Applicant's Attorney, Eric W. Guttag met with Examiners Golian and Paden. During this March 2, 1987 interview the product and process problems associated with direct addition of calcium from the claimed sources to fruit juices were demonstrated. Subsequent to this interview a Rule 132 Declaration of Timothy W. Dake was filed. This Declaration describes the samples which were offered or shown to the Examiners, as well as demonstrations which were conducted during the interview. A copy of this previously filed Declaration is appended to this response. The significance of this Declaration will be discussed further in the appropriate sections of this amendment.

Bases for the Amendments:

The bases for the newly added claims are:

Claim 29: Original Claim 19 and in the Specification at Page 5, Line 24 through Page 6, Line 3; Page 6, Line 15 through Line 28, Page 9, Line 17 through Page 10, Line 19; and Page 13, Line 16 through Page 14, Line 35

Claim 30: Original Claim 20 and in the Specification at Page 13, Line 29 through Page 14, Line 11

Claims 31 - 34: In the Specification at Page 15 Line 1 through 33

Claim 35: Original Claim 21 and in the Specification at Page 13, Line 29 through Page 14, Line 4

Claim 36: Original Claim 22 and in the Specification at Page 14, Line 12 through Line 22

Claims 37 - 38: Original Claims 23 and 24 respectively and in the Specification at Page 15, Line 1 through 33

Claim 39: Original Claim 25 and in the Specification at Page 11, Line 14 through 23

Claim 40: Original Claim 26 and in the Specification at Page 5, Line 24 through Page 6, Line 28; Page 8, Line 33 through Page 10, Line 19

Claims 41 and 45 - 47: In the Specification at Page 15, Line 1 through 33

Claim 42: Original Claim 20 and in the Specification at Page 13, Line 29 through Page 14, Line 11

Claim 43: Original Claim 21 and in the Specification at Page 13, Line 29 through Page 14, Line 11

Claim 44: Original Claim 27 and in the Specification at Page 17, Line 1 through 3

Rejection Under 35 U.S.C. 102/103:

The Examiner rejected original Claim 28 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103 as obvious over Japanese Patent 54-8767 issued to Kaju or U.S. Patent 3,657,424 issued to Aktins.

Please note that the original Claim 28 has been cancelled obviating this rejection.

Rejections Under 35 U.S.C. 112:

The Examiner rejected original claims 19 - 27 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Please note that the claims have been rewritten to distinctly claim the subject regarded as the invention. In particular, the original, independent Claim 19 has been rewritten as independent Claims 29 and 40 which specifically claim the amounts of calcium and the acid component in the premix solution of solubilized calcium for both the single-strength and the concentrated fruit juice products. The Applicant respectfully asserts the rewritten claims obviate the rejection under 35 U.S.C. 112, second paragraph.

The Examiner has also noted in this rejection under 35 U.S.C. 112, second paragraph, that, "It is not seen that the use of a premix containing orange juice is functional for any and all calcium sources." The Applicant is uncertain as to the reason for this remark. The calcium sources of the claimed invention are calcium carbonate, calcium oxide and calcium hydroxide. Indeed the use of orange juice as a premix stabilizer as claimed in original Claim 23 (new Claim 37) is applicable to these calcium sources. If the Examiner is referring the problems associated with direct addition of calcium carbonate or calcium hydroxide to fruit juices as demonstrated by the Applicant and Messrs. Dake and Guttag, during the March 2, 1987 interview (see Mr. Dake's Rule 132 Declaration, attached), the use of orange juice as a premix stabilizer is a different situation. The amount of orange juice used is only an amount sufficient to provide a sugar content in the premix of from about 2 to about 12° Brix. This is a lower concentration of orange juice than was used for the interview demonstrations. In addition, any off-flavors, off-odors or color

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changes which might occur from the combination of this lower concentration of orange juice with one of the three calcium sources would be reduced to insignificance during the dilution of the premix solution of solubilized calcium in step b of the process. (See original Claim 19 or new Claims 29 and 40)

Rejections under 35 U.S.C. 103:

The Examiner rejected original Claims 19 - 27 under 35 U.S.C. 103 as being unpatentable over Nakel, et al (U.S. Patent 4,551,342) in view of Sperti et al (U. S. Patent 3,114,641.) The Examiner states that Nakel, et al discloses in Embodiment 1 a method of making a beverage in which calcium carbonate and magnesium carbonate are combined with an aqueous solution of citric, malic and phosphoric acids. This "premix" is then combined with a beverage syrup. The Examiner further states that Sperti teaches the use of fruit juice products containing calcium chloride, citrates and malic acid. The Examiner argues it would be obvious to one of ordinary skill in the art to substitute the orange juice of Sperti for the beverage syrup of Nakel et al since both Nakel et al and Sperti et al are directed to flavored beverages generally and the utilization of orange juice specifically in the method of Nakel et al is not seen to constitute unobviousness. The Examiner further argues that while it is appreciated that the specific calcium content of the claims is not recited, the variation in calcium content is within the determination of one of ordinary skill in the art of beverage formulation.

The Applicant respectfully disagrees for the following reasons:

1. One of ordinary skill in the art would have no reason or

motivation to combine Nakel, et al and Sperti, et al. The purpose of Sperti et al is to provide an extended or diluted citrus fruit juice beverage such that the flavor and body of the pure juice is maintained. Nakel et al, relates to beverages especially suited for carbonated soft drinks comprising specific mixtures of cations and edible acids that provide improved flavor impressions.

(Abstract) Indeed, all of the embodiments described in Nakel et al, including Embodiment 1 relied upon by the Examiner, concern carbonated beverages. None of the nine embodiments utilize any fruit juice in the flavoring systems. (Nakel et al, however, do contemplate the use of up to 50% fruit juice as part of the flavorant.) One of ordinary skill in the art would have no motivation to combine any of the carbonated beverage teachings of Nakel et al with the teachings of Sperti et al which are aimed at maintaining pure juice flavor and body in an extended juice product.

2. The beverages of both Sperti et al and Nakel et al are such that it is unnecessary to use a premixing process. In Sperti et al the salts and acids used to maintain the pure juice body and flavor in the extended juice product can be added to either the juice or concentrate, the water used to extend the juice or the extended juice product itself. In fact Sperti et al even suggest addition to the juice or concentrate is preferred (see Column 5, Line 70 to Column 6, Line 5.) In Nakel et al, the stability of the beverage system is supplied by the mixed cation-acid system (Column 5, Lines 10 to 30) obviating the need for any premix to allay product and processing problems.

"The specific cation-acid mixtures of the present invention achieve the above objects while avoiding several problems or prior art beverage tablets or powders which use cation carbonates (or bicarbonates) and edible acids to generate carbonated beverages. One of these problems is the off-notes imparted by some of

the cations. For example, calcium can impart a chalky note ... By using a selected mixture of these cations in conjunction with a selected mixture of edible acids, the effect of the individual off-notes is surprisingly attenuated ... Moreover, solubility problems occasioned by the formation of precipitates, when some cations (especially calcium) are added to certain of the acids (especially citric acid) are unexpectedly minimized. By avoiding such solubility problems the liquid beverage compositions of the present invention not only have improved flavor (e.g. no chalky note due to insoluble calcium salts), but can also be formulated into storage stable concentrate and syrup forms."

Neither Sperti et al or Nakel et al suggest a need form a cation/acid premix, in fact, Sperti teaches away from any premix method by saying that the addition of the salts and acids directly to the fruit juice or concentrate is preferred. Nakel et al teaches that the stability requirement of their claimed beverages is adequately and unexpectedly effected through the mixed cation-acid components.

In the claimed process of the instant application, however, the use of the premix solution of solubilized calcium is important. The beverages resulting from the claimed process do not enjoy the stabilizing benefits of the mixed cation-acid system of Nakel and, as will be discussed later, contain considerably greater concentrations of calcium than taught by either Nakel et al or Sperti et al. Some of the problems associated with adding dietary levels of calcium to orange juice without the benefit of the instant claimed process were demonstrated during the March 2, 1987 interview and are described in the attached Rule 132 Declaration of Mr. Dake. In addition, the problem of precipitation of calcium

salts is discussed in the Specification of the instant application as well as in Nakel et al. The instant claimed premix process overcomes these problems by forming a solution of solubilized calcium (which itself, even with the use of premix stabilizers, is not particularly stable (meta-stable)), which is then relatively quickly combined with the remainder of the fruit juice product or fruit juice concentrate ingredients to form a finished product. Orange and grapefruit juice products supplemented with dietary levels of calcium and shown to the Examiner during the March 2, 1987 interview during the prosecution of the parent application attest to the success of the instant claimed process in overcoming the negatives associated with direct addition of calcium to the fruit juice (as is preferred by Sperti et al).

3. The levels of calcium in the fruit juice product produced by the instant claimed process are considerably greater than those of either Sperti et al or Nakel et al. Both Sperti et al and Nakel et al utilize calcium in a system of cations and acids to help restore the flavor of extended juice products to the flavor of 100% juice products or to provide desired improved flavor and body impressions of carbonated beverages, respectively. In Sperti, the highest level of calcium disclosed is 0.014% (Column 5, Line 15). In fact, the inclusion of calcium is not required to practice the invention of Sperti (See formula at Column 5, Lines 40 to 62.) The calcium levels in the nine carbonated beverage embodiments of Nakel et al (none of which contain fruit juice) range from 0.014 to 0.045%. In addition, calcium is never present as a single cation. It is always present with potassium and preferably with potassium and magnesium. In fact Nakel et al teach that the cation and acid mixtures are key to obtaining the beverage flavor and body impression benefits of their invention.

By contrast, it is the intent of the instant claimed process to

produce fruit juice products containing higher dietary levels of calcium. Unlike Sperti et al and Nakel et al, the level of calcium in the single-strength fruit juice product produced by the instant claimed process ranges from about 0.05 to about 0.26% by weight, and is preferably from about 0.10 to about 0.15% by weight, e.g., the level in milk. The products of the instant claimed process are intended for daily use by consumers primarily as a means of supplementing dietary calcium intake.

4. The selection of the calcium levels of the product made by the instant claimed process goes beyond a mere matter of choice by one of ordinary skill in the art of beverage formulation. The Examiner argues that even though the specific calcium content of the instant claimed invention is not recited (Nakel et al utilizes 0.04%), the variation in calcium content is within the determination of one of ordinary skill in the art of beverage formulation.

The Applicant respectfully disagrees. Both Sperti et al and Nakel et al utilize lower levels of calcium for the purpose of improving flavor and mouthfeel. By contrast, the calcium levels of the product made by the instant claimed process are designed to supply the calcium needed for diet supplementation. These are two completely different purposes for the calcium component of these beverages.

The level of calcium in the product made by the instant claimed process is not determined solely by one of ordinary skill in the beverage formulator's art. Instead, it must be determined by those of skill in several different arts including inter alia the medical, dietary and nutritional arts. Applicant asserts that the higher level of calcium in the product made by the instant claimed process is neither obvious nor simply a matter of choice based on the lower flavor and mouthfeel enhancing levels of calcium found in Sperti et al and Nakel et al.

The Examiner argues that it would be obvious to one of ordinary skill in the art to substitute the orange juice of Sperti et al in the "premix method" of Embodiment 1 of Nakel et al. The Applicant respectfully asserts that the above remarks show that the beverages of Sperti et al and Nakel et al are sufficiently different that there would be no motivation for one of ordinary skill in the art to combine the teachings of Sperti et al, (method for extending fruit juice products without loss of whole juice flavor) with Nakel et al, (beverage with specific cation and acid mixtures designed to provide improved flavor impression which can be made according to Embodiment 1 by mixing together the specific cation-acid mixture prior to combining with the rest of the ingredients). Hypothetically, if one were to combine these two references, the result would be a beverage containing orange juice and the cation-acid mixture of Nakel et al. Premixing the cation-acid system would be unnecessary due to Nakel et al's unexpected stability resulting from the specific cation-acid mixtures used. In addition, the level of calcium in the product would be below the dietary levels in the product made by the instant claimed process. Even in the face of these two references combined, Applicant asserts the instant claimed process is unobvious.

The Examiner also argues that the use of orange juice in the premix (original Claim 22) or the use of sugar in the premix (original Claim 24) are a matter choice with respect to including them in the premix of Nakel et al. The Applicant respectfully disagrees. In Embodiment 1 of Nakel et al, the sugar is not added during the "premix" step but is specifically added in a later step. (Of course juice is not added at all since fruit juice is not an ingredient in any of the nine embodiments of Nakel et al.) There is no motivation to add the sugar (or juice) into Nakel et al's

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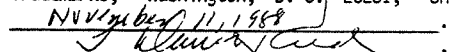
"premix" as a stabilizer because, as Nakel et al teaches, the specific cation-acid mixture supplies an unexpected stability to the product, obviating the need for any premix or premix stabilizer. In the instant claimed process, the fruit juice, sugar, and polysaccharide (see new Claims 33 and 46) in the premix are preferred aids to stabilizing the premix solution of solubilized calcium (see in the Specification, Page 15, Lines 1 - 33) and not obvious from or merely a matter of choice for inclusion in the "premix" described in Embodiment 1 of Nakel et al.

Finally, the Examiner points out that the use of freezing in original Claim 27 is a well known expedient in the beverage art. The Applicant asserts this claim, now new Claim 44, is allowable since it is merely a preferred embodiment of new Claim 40, which, for reasons noted above, is unobvious.

Accordingly, Applicant respectfully requests the application be reconsidered in light of these amendments and remarks and that the rejections under 35 U.S.C. 102, 35 U.S.C. 103, and 35 U.S.C. 112, second paragraph be withdrawn and an early allowance of the claims be granted.

CERTIFICATE OF MAILING UNDER 37 CFR 1.8 (a)

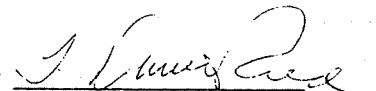
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